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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/618,188	07/10/2003	Yoshiki Kano	16869B-074800US	4295

20350 7590 12/09/2005

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EXAMINER

KROFCHECK, MICHAEL C

ART UNIT	PAPER NUMBER
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2186

DATE MAILED: 12/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/618,188

Applicant(s)

KANO, YOSHIKI

Examiner

Michael Krofcheck

Art Unit

2186

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-14, 21 is/are allowed.
- 6) ☒ Claim(s) 15-18 is/are rejected.
- 7) ☒ Claim(s) 19, 20 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 12/7/05.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. This office action is in response to application 10/618,188 filed on 7/10/2003.
2. Claims 1-21 have been submitted for examination.
3. Claims 1-21 have been examined.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claim 15 and 16 are rejected under 35 U.S.C. 102(e) as being anticipated by Bitner et al. U.S. Patent Application Publication 2004/0153614 (hereinafter Bitner).
6. With respect to claim 15, Bitner teaches of a disk array unit, comprising: a storage area including a plurality of magnetic disks for storing data (fig. 4; paragraph 0005, 0044); and

a storage controller including a processor to regulate data flow into and out of the storage area (fig. 9, 11, 14, 15; paragraph 0103; as the converter calls a function of the DLU to execute the operation; the DLU is responsible for storing data to the disks and managing the status of the virtual tape library. As the DLU does these things, it must contain a controller which is directed by a processor to carry out the tasks),

a memory to store information needed to manage the storage area (fig. 11, item 324; paragraph 0105, 0111-0117; where the DLU may contain a relationship table holding data describing the emulated tape device. The DLU database contains configuration information for all elements in the virtual tape library emulated by the DLU including the status of such elements. As this information is contained in the DLU, it must be located in a memory),

a first interface coupling the disk array unit to a server (fig. 8, 11; paragraph 0056; where an FC link (interface) connects the DLU and the VTL server), and

a second interface to couple the disk array unit to another disk array unit provided at a remote site (fig. 8, 11; paragraph 0057; where remote mirroring between a local DLU and a remote DLU is used. Since the data is transferred between the two DLUs, there must be an interface that connects them),

wherein the memory stores a management table associating a plurality of storage locations on the disk array unit to a plurality of emulated tape storage locations (fig. 11; paragraph 0111-0125; the DLU database device contains the configuration of the elements in the virtual tape library including the tape drives (emulated storage locations)),

the emulated tape storage locations being associated with a plurality of emulated tapes (fig. 11; paragraph 0111-0125; where the tape mailbox contains the label of the virtual cartridge (emulated tapes) that occupies the tape drive (emulated storage locations)),

each of the plurality of emulated tapes being associated with data in the disk array unit (fig. 10; paragraph 0105; where the objects in the disk storage model, i.e. the virtual DLU tapes, correspond to data which is stored in the disk library unit).

7. With respect to claim 16, Bitner teaches of all the limitations of the parent claim as discussed supra. Bitner also teaches of wherein the management table is used to generate a disk-based tape library (fig. 11; paragraph 0111; where the DLU database device (management table) contains the configuration information for all elements in the virtual tape library emulated by the DLU. Hence it is used to embody the virtual tape library).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

10. Claims 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bakke et al., U.S. patent 5,765,204 (hereinafter Bakke).

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11. With respect to claim 17, Bitner teaches of all the limitations of the parent claim as discussed supra. Bitner also teaches of wherein the management table includes an ID field (fig. 12, item 342; paragraph 0125), a tape storage field (fig. 12, items 332; paragraph 0120; where the virtual cartridge (tape) information is stored) and a status field (fig. 12; items 334, 336, 338, 340; paragraph 0121-0124; the status of the tape drive, bin, robot, import/export slot are contained).

Bitner fails to explicitly teach of the management table includes a disk storage field. However, Bakke teaches of a management table including a disk storage field (fig. 2a; column 3, lines 42-59; information mapping logical groups to physical groups on the DASD is included in the mapping directory).

Bitner and Bakke are analogous arts as they are both involve accessing data in disk storage system. It would have been obvious to one of ordinary skill in the art having the teachings of Bitner and Bakke at the time of the invention to incorporate the mapping directory of Bakke into the DLU database device of Bitner. The motivation for this would have been to increase the speed of accessing the disks as the logical to physical mapping occurs locally in the storage system and not in a separate server.

12. With respect to claim 18, Bitner and Bakke teach of all the limitations of the parent claim as discussed supra. Bakke also teaches of the disk storage field includes information on logical unit number and logical block address (fig. 2a; column 3, lines 42-59; the system logical block address space is divided into logical groups (logical units) 1 through N (logical unit numbers)).

Allowable Subject Matter

13. Claims 1-14 and 21 are allowed.
14. Claims 19 and 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
15. The following is a statement of reasons for the indication of allowable subject matter:
 - a. With respect to claims 1-10, and 19-21, the prior art of Bitner and Trimmer et al., 2004/0181628, teach of moving an emulated tape from a first element to a second element simulatively without moving data associated with the emulated tape (Trimmer, abstract). The prior of Bitner and Trimmer et al., 2004/0044842 (Trimmer 2), teach of archiving/exporting an emulated tape to a physical tape (Bitner, fig. 7 and corresponding description; Trimmer 2, fig. 2 and corresponding description). The prior art fails to teach of copying and then deleting the original data (i.e. archiving data) from an emulated tape in a disk based storage device to ***another disk based storage device*** as is taught in claims 1, 19-21.
 - b. With respect to claims 11-14, the prior art of Bitner teaches of managing the disk library units (DLU) with multiple instances of management information/tables in multiple locations (figs. 9-13 and their descriptions). The prior art does not teach of a second management table, that associates the plurality of emulated tapes to the plurality of emulated storage tape locations in the first storage subsystem, which is ***independent*** from the first management

table, that associates a plurality of storage locations on the first storage subsystem to a plurality of emulated tape storage locations

Conclusion

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Krofcheck whose telephone number is 571-272-8193. The examiner can normally be reached on Monday - Friday.

18. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matt Kim can be reached on 571-272-4182. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

19. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Michael Krofcheck



MATTHEW D. ANDERSON
PRIMARY EXAMINER